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ABSTRACT

The association between usage of alcohol, cigarettes, marijuana and other behaviors was investigated among ninth graders in 40 schools in Ontario. A sample of 1008 boys and 1040 girls gave information on a range of behaviors and activities. Results indicated that drug usage was strongly associated with delinquent, sexual and social behavior. Both the lower and negative associations were found with achievement and religious behavior. (Author)

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Using Other Behaviors in the Study of Adolescent Drug Usage[1,2]

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There have been a very large number of studies whose major focus has been on adolescent drug involvement. The vast majority of these studies have concerned themselves solely with behavior involving drugs, ignoring any other kind of behavior patterns among responses with no direct drug reference. Indeed, many of these studies have focused entirely on the consumption of one specific drug, commonly marijuana. Other single focus studies involve tobacco, heroin, L.S.D., and the amphetamines.

Certain variations in the criterion variable do, of course, occur. Specific circumstances of consumption may be investigated. These may include site (e.g., school, home) and style of consumption (e.g., regular but few drinks per occasion or a few occasions but greater consumption per occasion). Social vs solitary consumption would appear here, as would studies concerning self report as to motivation.

Largely absent from this research is information on the relationship between different forms of drug usage and other behaviors

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which contain no direct involvement with drugs. This paper is an argument for more information on this relationship.

First, let me give some indication of what I mean by 'other behaviors'. Any act which includes drug consumption or direct dealing with drugs (such as trafficking, enquiring about local supplies) will be regarded as a drug-related behavior. The remaining acts will be called other behaviors. They will include such acts as the carrying out of household chores, attainment level in school, stealing from a store, going to church, and so forth. The way in which meaningful and parsimonious measures may be obtained from this conglomerate set will be discussed later in the paper.[1]

Now, why should we be concerned with the behavioral context in which the use of drugs takes place? It is necessary, first, to accept that such behavior is highly unlikely to take place in a vacuum (i.e., without covariations with other response areas). There is fragmentary evidence of such covariation of the interrelations that surround most behaviors of social interest, and support comes from the whole thrust of the deterministic approach to behavior. Thus we have good reason to expect relationships.

Even so, why the concern? Let me give some reasons. First, as scientists we should be aware of the natural history of the phenomena

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[1] At the beginning I mentioned that the most narrow focus is on a single drug. Researchers are well aware that there is indeed close relationship between different drugs -- likely enough fitting a Guttman scale with some reasonable degree of accuracy -- and there is considerable research activity along these lines.

of interest, and this includes its correlates and relations to other phenomena. Second, knowledge of the relations between other behaviors and drug use will help us understand the theoretical status or function that such a behavior serves. As Jessor and Jessor (1977) remark, "The possibility that behaviors as dissimilar as those involved in militant activism, smoking marijuana, and permissive sexuality can all serve similar social-psychological functions -- for example, repudiation of conventional norms or independence from parental control -- suggests that focusing on any one behavior would likely be misleading. Most recent research has tended to be behavior specific: a study of drug use, or activism, or drinking behavior; but such studies ignore the conceptual significance of problem behavior as subtending a set of functionally similar, mutually substitutable, even simultaneously learned, alternative social behaviors" (pp. 33-34). These remarks concern what Jessor and Jessor call adolescent 'problem behavior' but the general thrust of their remarks is appropriate here. We may ask our subjects why they take or do not take certain drugs, or have a certain level of consumption. An alternative approach is to observe concomitances and make inferences as to the meaning of a drug for a person (or group) on the basis of observation and theory. This reason for studying other behaviors can be taken further. It should be clear that our understanding of drug usage would be greatly extended if we could view our matrix of concomitant behaviors <u>over time</u>. We are aware that there are developmental changes in drug usage (e.g., the increase in usage over the adolescent period) and

accompanying rising and falling of indices of other behavior can again give us additional insight. A fourth reason is that even if we discard theory, knowledge of behavioral associations would help in indicating means by which rates or magnitude of certain behaviors may be increased or decreased. Finally, I would suggest that the general public is concerned with, and even acts upon, supposed relations between drug usage and other behaviors. Scholastic achievement and delinquent behavior would be examples. It is part of our responsibility as scientists (at least those of the applied kind) to provide such information for those making decisions.

A further question appears at this point: "What kind of variable is to be used as an index of behavior?" There are several issues here, but my main concern will be with the use of molar indices (often a weighted sum of different behaviors[1]) rather than of specific acts. This is a complex matter. My own view is that parsimony is critical here and that by deriving a limited number of global indices we are more likely to be of use to the professional and applied worker and at the same time develop a theoretical model that will have explanatory power across the widest range of circumstances.

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[1] A methodological issue here is the appropriateness of such techniques as factor analysis and cluster analysis to aid us in assembling sets of items and global-scoring procedures. The latent variable concept seems more fitting for, say, attitude items, than behavior items. Further, there can be distribution problems with behavior items which may well be markedly skewed and/or dichotomous. However, it seems reasonable to proceed with such a model as factor analysis until it becomes clearly inappropriate and a better model is available.

It is now time to consider some representative and relevant previous researches. Such studies are relatively few if concern is with both systematic[1] and wide-focus examination of adolescent behavior.

The leisure behavior of adolescents was examined by Witt (1971). A factor analysis of 44 activities gave 4 factors: Sports, Outdoor-Nature, Adolescent Social, and Aesthetic Sophisticated. Kulik, Stein and Sarbin (1968) carried out a comparison of behavior items between high school and institutionalized delinquents and found four clusters: Delinquent Role; Drug Usage; Parental Defiance; and Assaultiveness.

Jessor and Jessor (1977), in a longitudinal study of problem behavior in adolescents, considered activism, marijuana use, sexual intercourse, the drinking of alcohol, general deviance (delinquency), as a set of problem behaviors; and religious involvement and grade point average, as a set of conventional behaviors. With the possible exception of activism, the associations, by and large, seemed to follow expectation (i.e., positive association within sets and negative between sets).

I would now like to describe some of the results of a recent study.[2] The purpose was to locate global indices of behavior associ-

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[1] It would seem that in many cases, the inclusion of behavior other than that directly in question is a matter of convenience and availability of data rather than of planned investigation.

[2] The study reported here was part of a much larger investigation into personality and environmental correlates of drug-related behavior in young adolescents.

ated with drug involvement by young adolescents.

Subjects. The subjects were a stratified sample of 9th graders (1008 boys and 1040 girls) drawn from 40 schools in Ontario. Principles of stratification were: Region in Ontario, size of school; public vs Roman Catholic school system.

Measures. Information on known or supposed relationships between drug usage and other behaviors, and on the behavior of young adolescents in general, were obtained from:

- articles, books, and research reports
- verbal and written accounts by a small group of 9th graders
- reports from principals
- reports from persons otherwise concerned with juveniles and/or drug usage
- project personnel

Four principal areas of behavior emerged from the research literature. These were: school achievement (e.g., Hogan, Mankin, Conway and Fox, 1970); religious behavior (e.g., Braucht, Brakarsh, Follingstad and Berry, 1973); sexual behavior (e.g., Jessor, Jessor and Finney, 1973; Brill and Christie, 1974); delinquent behavior (e.g., Kulik, Stein and Sarbin, 1968; Jessor, Jessor and Finney, 1973). These areas were not the limits of the range of behaviors covered, but were areas with a high degree of corroborative evidence.

The final selection of items was based upon (i) relevance to drug usage (defined as a known or presumed correlation of ±.2 as a lower limit) and (ii) socially important areas of behavior, even though relevance to drug usage might be unclear. It seemed wise to cover some areas of social importance that might be unrelated to drug usage in order to get even clearer perspective. A pre-test of these items (Carpenter, Hundleby and Mercer, 1976) found nine factors of adolescent behavior: School Misbehavior; Sport; Non-dating Social; Adolescent Social; General Misbehavior; Outdoor Nature; Membership in Clubs and Organizations; Aesthetic Conforming; and Part-time Employment. The sample was 231 9th Graders from 2 different schools. Based upon these results, 43 items were selected[1] and formed the core of "other behavior" items in the main study. These 43 items can be seen in Table 1.

The drug usage items concerned marijuana, tobacco and alcohol (beer, wine, liquor) consumption over the past 6 months.

The School and College Ability Test (SCAT), Series II, Form 3B (1973) and grade point average were included as measures of achievement.

Analysis

The 43 behavior items were intercorrelated and factored separately for both boys and girls. Eight principal axis factors were rotated (direct oblimin) using SPSS programs. One rotated factor for both boys and girls was discarded as having negligible loadings.

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[1] An additional, larger set of items was administered to only two-thirds of the sample.

The 7 remaining factors are presented in Table 1. Factor scores were computed and, with the achievement measures, correlated with the 3 drug usage indices.

Results

The following factors were named for both sexes,

Social Behavior (visiting a friend's house; listening to records with friends)

Outdoor Behavior (camping; boating)

Religious Behavior (frequency of visits to church)

Home-Related Behavior (doing household chores; doing homework)

Athletic Behavior (watch a sports event; practising for a team sport)

Sexual Behavior (frequency of heavy petting; sexual intercourse)

Delinquent Behavior (played 'hookey' from school; destroyed property just for the fun of it)

The correlations between the various measures are presented in Table 2.

Discussion

The most salient other behaviors associated with drug usage are:

(i) delinquent behavior (+)

(ii) sexual behavior (+)

(iii) social behavior (+)

(iv) achievement (-)

(v) religious behavior (-)

These correlations are, in several cases, quite high. With additional items, and perhaps improvement of the single item drug usage criteria, a slight increase in correlation would be expected. Rather clearly, certain other behaviors are linked to adolescent drug usage, and the linkage in some cases is strong. A further consideration is that there is considerable common variance shared among these other behaviors.[1] Such results certainly support the Jessor and Jessor (1972) suggestion of a syndrome of behavior problems. However, the data would also fit other propositions. In addition, we have social behavior which has no compelling rational association with deviancy or problem behavior. Since a high score on social behavior indicates someone who is socially active, this has implications for delinquency, sexual behavior and drug usage if, as seems reasonable, these are viewed as largely social activities at this age. This could suggest that we are simply looking at increased opportunity.[2] A good case could also be made for the involvement of a trait such as extraversion.

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[1] This is shown by the multiple correlations between other behaviors and alcohol (R_M = .59; R_F = .57), tobacco (R_M = .54; R_F = .65), and marijuana (R_M = .61; R_F = .56).

[2] For example, the more parties an adolescent attends, the more likely is he to be offered an alcoholic drink.

Clearly, caution in interpretation is necessary until further evidence is available. At the moment my tentative view is that delinquent and sexual behavior, with low achievement and infrequency of religious behavior may well form a syndrome of lack of acculturation (or problem behavior), this being the major group of behaviors associated with drug usage. A further set of social behaviors is also involved, but to a lesser degree.

Turning now to sex differences, we can see (Table 2) that results for the two sexes are remarkably close.[1] One minor discrepancy is not without interest, however. The smoking of cigarettes seems rather more central to the lack of acculturation syndrome for girls than for boys.

Comparisons of the patterns of correlations given by the three drug usage criteria show a high degree of similarity, suggesting that at this age, at least, they appear to be serving rather similar functions. Minor but interesting discrepancies appear for alcohol (which is associated rather more than the other two with outdoor, athletic and social behavior) and tobacco (which is associated negatively with achievement rather more than the other two).

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[1] It should be recalled that the analyses were carried out separately for the two sexes and that the weights for the factor scores will be slightly different. Identical weights (leading to identical measures) would probably bring the results even closer.

As a post-script, I should mention that a second sample (762 boys and 885 girls), in Grade 10 and from the same schools, was also tested. Rather similar factors emerged to those at the 9th grade level. Correlations with use of tobacco, marijuana and alcohol use again show delinquent, sexual, and social behavior as major and approximately equal correlates.

Finally I should like to return to my earlier argument. A response such as the drinking of alcohol, or smoking marijuana or tobacco does not occur in a behavioral void. Drug usage among adolescents has been shown to be related, and in some cases highly related, to several other sets of behaviors. Such data can assist us toward the development of a model of adolescent drug involvement that is more viable theoretically and more useful for applied purposes than concentrating on one behavior alone.

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